A THREE-PIECE LOOSE-LEAF BINDER

[0001] This application claims priority under 35 U.S.C. § 119(e) to Provisional Application No. 60/503,265 filed on September 15, 2003.

FIELD OF INVENTION

[0002] The invention is in the field of loose-leaf binders and more particularly loose-leaf binders using thin sheet plastic for the front and rear covers.

BACKGROUND OF THE INVENTION

[0003] The typical construction of a loose-leaf binder is well-known in the prior art. Commonly, a loose-leaf binder has two covers connected to each other by a spine with a conventional ring assembly affixed on the spine for holding papers. The connection of the ring assembly to the spine is usually by rivets or screws whose heads are exposed on the outside of the spine. Alternatively, rivet-like projections may be integrally molded to extend inwardly from the inside surface of the spine and then to engage the ring assembly. Covers of binders may be separate panels attached to the spine by hinges, or the covers and the spine may be of a contiguous integrally molded plastic, where the hinges are segments of the molded plastic.

[0004] Some of the least expensive binders are constructed of a simple thin sheet of uniform thickness forming both the spine portion and the front and rear cover portions with a basic split ring assembly being attached to the thin flat spine portion. More attractive and expensive binders feature a curved spine between the front and rear covers. There have been various attempts in the prior art seeking to achieve this more expensive binder appearance with less expensive materials and methods. For example, United States Patent No. 3,201,145 for "Molded Plastic Loose Leaf Binders" teaches an integrally molded binder with a curved spine, a front cover and a back cover having living hinges and flanges, wherein the rivets for securing the ring assembly to the spine are molded into the spine. Thus, the rivet heads are not visible on the outside surface of the spine.

[0005] United States Patent No. 4,295,747 for "Integrally Molded, Looseleaf Books with Ring-Binder-Mounting Posts Molded on Spine" is yet another example that teaches an integrally molded curved spine connected to a front and a back cover by living hinges, wherein a projection is integrally molded on the inner side of the spine for securing a ring assembly. Thus, the rear face of the spine does not have an exposed rivet head or similar attachment projection.

[0006] Integrally molded binders are relatively expensive to produce, as they require construction and use of molds for each binder size.

[0007] The present invention addresses the need for a binder that resembles the more expensive binders while being inexpensive to produce.

SUMMARY OF THE INVENTION

[0008] This invention is an improved binder and method of constructing same. The new binder is constructed from a flat sheet of plastic having a length and a height, which may be formed by extrusion or other means to form the inner spine portion and the front and rear covers. This extruded sheet of plastic has two score line depressions spaced apart along its length and extending transversely across the height of the sheet, thereby creating the inner spine portion and front and rear covers. The score line depressions serve as living hinge areas between each cover and the inner spine portion. A convex curved or other non-planar shaped outer spine portion of molded plastic is positioned to overlie and fasten with the outside surface of the inner spine portion.

[0009] In one embodiment of the new invention, the outer spine member is injection molded to have a convex outer surface with at least two axially spaced ribs integrally molded therewith extending inwardly from the inner surface, flanges integrally molded at each end of the outer spine member extend inwardly like the ribs, and a plurality of rivet like projection means integrally molded therewith, for fastening

together the outer spine portion, the inner spine member and the ring assembly.

[0010] In this embodiment the inner spine portion defines an elongated rectangular element with two axially spaced apertures along its length. The ring assembly base defines a generally rectangular element or frame with spaced holes aligned with the apertures of the inner spine portion. The projections of the outer spine member extend through the aligned apertures in the inner spine portion and through the aligned holes in the frame of the ring assembly. The end of each projection is then deformed, preferably by heating, to secure together the outer spine member, inner spine portion and ring assembly.

[0011] Other features and advantages of the invention will become apparent from the drawings and description below of the preferred embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 is a perspective view of a binder constructed according to one embodiment of the present invention,

[0013] FIG. 2 is a fragmentary cross-sectional view taken on plane 2-2 of FIG. 1,

[0014] FIG. 3 is a fragmentary cross-sectional view taken on plane 3-3 of FIG. 2,

[0015] FIG. 4 is a fragmentary cross-sectional view similar to FIG. 2 of a second embodiment which shows a binder having an outer spine portion without ribs, and

[0016] FIG. 5 is a fragmentary cross-sectional view similar to FIG. 3 taken on plane 5-5 of FIG. 4.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

[0017] Referring to FIGS. 1-2, the new binder 10 is formed of a continuous extruded flexible plastic sheet of uniform thickness which defines a front cover 11, a rear cover 12 and inner spine portion 13. The outer surface and inner surface of the sheet may be supplied with various design depressions for identification or aesthetic purposes, as well as textures to vary the friction across each surface. The sheet has two transverse score line depressions 14, 16 typically scored to a depth up to about one-half the sheet thickness. A conventional ring assembly 15 is attached to the inner spine portion 13 by a fastening means extending from the outer spine member 20. The fastening means can be integrally molded into the outer spine member 20, or it may consist of a more traditional rivet or screw device. The conventional ring assembly 15 includes at least two split rings 17, preferably three-split rings, spaced and configured to attach papers with correspondingly spaced holes. The ring assembly 15 typically has two or more holes correspondingly spaced for receiving a fastening means.

[0018] FIGS. 1-3 show a first embodiment of the binder having a relatively stiff outer spine member 20 with ribs 22 and two fastening means 21 integrally molded therewith. The outer surface of the outer spine member is convex, and the inner surface of the outer spine portion is concave. Each fastening means 21 is received by a correspondingly spaced aperture of the inner spine portion 13 of the continuous sheet and a correspondingly spaced hole of the ring assembly 15. The end of the fastening means can be dimensioned or adapted so that after it extends through the aperture of the inner spine portion 13 and the hole of the ring assembly 15 it cannot be subsequently withdrawn therefrom. Preferably, the end of the fastening means is deformed to a larger diameter once received by the aperture of the inner spine portion and the hole of the ring assembly, as shown in FIG 3.

[0019] Ribs 22 are integrally molded with the outer spine member 20 and have a cross-sectional area configured to substantially conform to the concave cavity of the outer spine member, such that the ribs 22 provide increased structural stability and support the outer spine from collapsing inwardly and losing its attractive shape.

[0020] Flanges 23 can be integrally molded at the ends of the outer spine portion 13 to prevent finger access to the area between the terminal edge or outer surface 13' of the inner spine portion 13 and remote edge or inner surface 20' of the outer spine portion 20. The

flanges 23 could also be dimensioned to prevent finger access to the usually sharp end edges of the ring assembly. Additionally, the flanges 23 could also be dimensioned to provide added protection to the thumb levers 18 of the ring assembly.

[0021] FIGS. 4-5 show a second embodiment where the ribs 22 of the outer spine member 20 shown in FIGS. 1-3 are absent, and the outer surface of the inner spine portion lies flush against the inside surface of the outer spine member. The means for fastening together the ring assembly, inner spine portion and outer spine portion is the same as in the first embodiment.

[0022] Alternatively, the means for fastening the ring assembly 15 to the inner spine portion 13 and with the outer spine member 20 is by traditional riveting. In this embodiment the outer spine member 20 has at least two apertures positioned and spaced to align with the apertures of the inner spine portion 13. Assembly of the binder consists of placing a rivet shank through each aperture of the outer spine member. The rivet shank is then received by a correspondingly positioned aperture of the inner spine portion 13 and the corresponding hole of the ring assembly. A clinch rivet, drive post, screw or barb is received by the rivet shank thereby fastening together the ring assembly, inner spine portion and outer spine member. Alternatively, the end of the rivet shank can be peened or otherwise deformed, thereby fastening

together the ring assembly, inner spine portion and outer spine member.

[0023] One of ordinary skill in the art can envision numerous variations and modifications to the described embodiments. For example, the non-planar outer surface of the outer spine member can be configured to have varying curvatures along its length or width, or can be molded to resemble the shape of a wave or any other combination of geometric shapes. Additional variations, might include making depressions in the sheet for purposes of identification, increased flexibility or aesthetics.

[0024] It is to be understood, of course, that the specific forms of the invention herein illustrated are intended to be representative only, as changes may be made which are still within the spirit and scope of the claims set forth below.